

REMARKS/ARGUMENTS

The remarks hereto attend to all outstanding issues in the pending office action of June 24, 2003. Claims 1 - 21 remain pending in this application.

1, 2 and 3. Claim Rejections – 35 USC § 102

Claims 1 and 14 stand rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 5,172,024 to Broussoux et al (hereinafter, “Broussoux”). We respectfully disagree. To anticipate a claim, Broussoux must teach every element of the claim and “the identical invention must be shown in as complete detail as contained in the ... claim.” *MPEP 2131* citing *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987) and *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989). Broussoux does not teach every element of Applicant’s claims 1 and 14, as further described herein below.

Broussoux teaches a mechanical device to eliminate ice comprising “a piezoelectric material having a **vibrating active surface** that **mechanically** cooperates with the wall to be de-iced...the amplitude of this vibration being sufficient to respectively **detach and/or break the deposit of ice** formed on said surface” (col. 2, lines 47-60, emphasis added). Broussoux further specifies “...a system **using no longer the Joule effect** but the mechanical vibrations produced by acoustic transmitters...”(col. 8, lines 11-12). As is well known in the art, the Joule effect is the generation of heat by the passage of electricity through a resistance. It is further well known in the art that melting requires heat. Therefore, Broussoux does not teach “a system for melting interfacial ice,” as laid out in Applicant’s claim 1. As claim 14 depends from claim 1, and therefore also incorporates a system for melting interfacial ice, Broussoux also fails to teach every element of claim 14.

In view of the above remarks, Applicant contends that claims 1 and 14 are allowable, and respectfully requests the Examiner’s reconsideration.

Claim 18 stands rejected as being anticipated by U.S. Patent No. 5,389,766 to Takahashi et al (hereinafter, “Takahashi”). Again, Applicant respectfully disagrees. In claim 18, Applicant describes a method wherein “The alternating electric field

contains capacitive AC energy. The *interfacial ice absorbs a portion of the capacitive energy of the AEF, converting it into conductivity (resistive) AC current*”(p. 4, lines 7-10, emphasis added). In other words, as stated in Applicant’s claim 18, “A method for melting interfacial ice at an ice interface, comprising a step of: applying an alternating electric field proximate to the ice interface for *generating a resistive AC current in the interfacial ice*”(emphasis added). Ice itself contains the current that generates joules heat. Takahashi, in contrast, teaches a system wherein heat is generated in a rail, where “conductive cables are wound by one turn around the segment of the rail between the through-holes and through the through-holes, *thereby forming heating coils*, and a high frequency power source *feeds current to the cables, thereby heating the rails by the electromagnet [sic] induction*, and melting snow and ice on and near the rail points”(col. 2, lines 39-42, emphasis added).

Applicant contends that, in light of the above arguments, claim 18 is different and allowable. Reconsideration of claim 18 is requested.

4 - 9. Claim Rejections – 35 USC § 103

Claims 2 stands rejected under 35 USC §103(a) as being unpatentable over Broussoux in view of US Patent No. 4,895,322 to Zieve (hereinafter, “Zieve”). Applicant respectfully disagrees and traverses the rejection. Applicant believes that Broussoux and Zieve do not render any of the claims *prima facie* obvious, as explained below.

The following is a quotation of from the MPEP setting forth the three basic criteria that must be met to establish a *prima facie* case of obviousness:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2142, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicant's claim 2 depends from claim 1, argued above. Broussoux does not teach the elements of claim 1. As elaborated above, Broussoux teaches detaching or breaking ice by applying to a material "an AC voltage at the natural resonance frequency, produced by the source 21, so as to stress the material and break the film of ice G formed on the surface of this material"(col. 6, lines 53-56). Again, Broussoux employs "...a system using no longer the Joule effect but the mechanical vibrations produced by acoustic transmitters..."(col. 8, lines 11-12).

Zieve is cited, presumably, because it discloses an AC power source providing an AC voltage of about 10 volts to 500 volts. However, nowhere does Zieve teach a system for melting interfacial ice. Rather, Zieve teaches a mechanical system, wherein "The current through the coil creates a magnetic field and establishes eddy currents in the thin metal skin of the aircraft wing. The repulsive force created between the coil and the wing...produces a rapid acceleration of the wing surface...This results in the ice which has been formed on the wing ***debonding from the wing surface and shattering away from the wing***"(col. 3, line 64 - col. 4, line 6, emphasis added). Neither Zieve nor Broussoux, either alone or in combination, teach or suggest every element of Applicant's claim 1. As claim 2 depends from claim 1, neither do Broussoux or Zieve teach or suggest every element of Applicant's claim 2.

Given the remarks above, Applicant respectfully requests withdrawal of the Examiner's rejection, and further requests allowance of claim 2.

Claims 3, 6, 12-13, 15 and 16 further stand rejected under 35 USC §103(a) as being unpatentable over Broussoux in view of US Patent No. 4,732,351 to Bird (hereinafter, "Bird"). Applicant respectfully disagrees and traverses the rejection. As argued above, Broussoux does not teach or suggest every element of Applicant's claim 1. Claims 3, 6, 12-13, 15 and 16 depend from claim 1. Bird also fails to teach or suggest every element of Applicant's claim 1. Bird teaches a mechanical device utilizing a piezoelectric material "which converts available electrical alternating current into mechanical force by realignment of its crystalline structures. This realignment ***causes the material to expand and retract in continuous motion and, thereby, prevents ice formation***"(col. 4, lines 10-14). Bird says nothing of a system for melting interfacial ice; indeed, Bird specifies that the device "does not have to

raise the temperature of the surface to the melting point of ice”(col. 3, lines 65-67). Therefore, as stated above, Broussoux and Bird, alone or in combination, do not teach or suggest every element of Applicant’s claim 1 or (because they depend from claim 1), claims 3, 6, 12-13, 15 or 16. Applicant therefore requests withdrawal of the Examiner’s rejection, and further requests allowance of claims 3, 6, 12-13, 15 and 16.

Claims 7-9 stand rejected under USC §103(a) as being unpatentable over Broussoux in view of US Patent No. 6,239,601 to Weinstein (hereinafter, “Weinstein). Again, Broussoux neither teaches nor suggests the elements of Applicant’s claim 1. Claims 7-9 depend from claim 1. Applicant respectfully disagrees with the Examiner’s rejection for at least the following reasons:

The Examiner cites Weinstein, stating that Weinstein discloses an interelectrode distance having a value of about 50 μm to about 500 μm . However, Weinstein teaches a “thickness measurement device and method that determines the thickness of a layer of ice”(col. 1, lines 55-56). Nowhere does Weinstein teach or suggest Applicant’s claim 1. As claims 7-9 depend from claim 1, Applicant submits neither Broussoux nor Weinstein, alone or in combination, neither teach nor suggest all of the elements of Applicant’s claims 7-9.

In view of the above arguments, Applicant respectfully requests withdrawal of the Examiner’s objection, further requests allowance of claims 7-9.

Claims 19-20 stand rejected under USC §103(a) as being unpatentable over US Patent No. 5,389,766 to Takahashi et al. (hereinafter, “Takahashi”) over Broussoux. The Examiner submits that Takahashi discloses substantially all features of the claimed invention except the step of applying an alternating electric field having a frequency greater than 1000HZ. Applicant respectfully disagrees and traverses the rejection. As laid out above, Takahashi does not teach generating a resistive AC current in interfacial ice, as is described in Applicant’s claim 18 (from which claims 19 and 20 depend). Where Applicant’s system causes joules heating within the ice itself, Takahashi heats an object (specifically, a rail), to which ice is attached. Neither does Broussoux teach generating a resistive AC current in interfacial ice. For at least this reason, neither Takahashi nor Broussoux, alone or in any combination, teach or suggest every element of Applicant’s claim 18, or its dependent claims 19-20.

In light of these remarks, withdrawal of the Examiner's rejection, and allowance of claims 19-20 is requested.

Claim 21 stands rejected under USC §103(a) as being unpatentable over Takahashi in view of Broussoux and further in view of Zieve. Respectfully, Applicant disagrees and traverses the rejection. Neither Takahashi nor Broussoux nor Zieve teach or suggest "A method for melting interfacial ice at an ice interface, comprising a step of: applying an alternating electric field proximate to the ice interface for generating a resistive AC current in the interfacial ice," as in Applicant's claim 18 (see the above arguments). Claim 21 depends from claim 18. As noted above, Takahashi teaches "a high frequency power source feeds current to the cables, thereby heating the rails by the electromagnet [sic] induction..."(col. 2, lines 39-41). As elaborated above, Broussoux teaches detaching or breaking ice. Zieve, as detailed above, teaches ice "...debonding from the wing surface and shattering away from the wing"(col. 4, lines 4-6). Given these arguments, including those regarding Takahashi, Broussoux and Zieve elaborated in further detail above, Applicant respectfully requests withdrawal of the Examiner's rejection, and further requests allowance of claim 21.

10. Claim Objections

Claims 4, 10, 11 and 17 stand objected to as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant believes that independent claim 1 has been shown to be allowable, for at least the reasons laid out herein above. Claims 4, 10, 11 and 17 thus also depend from claim 1, and are allowable for at least the reason that they depend from an allowable base claim. Applicant therefore requests withdrawal of all objections to claims 4, 10, 11 and 17, and further requests allowance of all of the claims.

11. Allowable Subject Matter

Applicant thanks the Examiner for recognizing the allowable subject matter recited in claims 4, 10-11 and 17. Applicant submits that there are further reasons for

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allowance of these and all other claims not specifically referenced in the Office Action of June 24, 2003, or in the remarks contained herein.

In view of the above Remarks, Applicant has addressed all issues raised in the Office Action dated June 24, 2003, and respectfully solicits a Notice of Allowance. Should any issues remain, the Examiner is encouraged to telephone the undersigned attorney.

Applicant believes no fees are currently due, however, if any fee is deemed necessary in connection with this Response, please charge Deposit Account No. 12-0600.

Respectfully submitted,

LATHROP & GAGE L.C.

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